

CHAPTER 7.0: A SUSTAINABLE FUTURE

7.1 OPEN SPACES AND WATERFRONT

Goals

- Complete the Mill River Greenway from Scalzi Park to Kosciuszko Park
- Establish an east-west pedestrian and open space network connecting Mill River Park, Columbus Park and Veterans Park
- Connect open space and waterfront areas
- Protect and enhance public access to the waterfront
- Protect coastal resources

A. Introduction

Open space in the City of Stamford is composed of its extensive shoreline and river system, several large natural areas, parks, agricultural lands, school open space, playgrounds, urban plazas and pocket parks.

The shoreline covers approximately 14 miles and supports a diversity of land uses. The waterfront includes Stamford Harbor, Westcott Cove, Dolphin Cove and Cove Island Harbor. Waterfront parks include Cummings Park with its public beach, Cove Island Park with beaches and wildlife sanctuary and Kosciuszko Park on the Harbor. Stamford is part of the coastal area of the State of Connecticut as defined in the Connecticut Coastal Management Act. The City has its own coastal management program, the Stamford Municipal Coastal Program (MCP), established with adoption of the Master Plan Coastal Addendum in 1984. Stamford has also established its own Harbor Management Commission, tasked with planning for the use of Stamford Harbor and the City's other coastal and navigable waters. Stamford is a significant center of recreational boating on western Long Island Sound, with a number of public boating facilities located on the waterfront and in the Harbor Management Area.

Several inland parks are located along Stamford's extensive river system; the most significant is Mill River Park. Plans to construct a continuous greenway along the Rippowam River from Scalzi Park to Kosciuszko Park are advancing through a series of park and pathway construction projects along the river. Scalzi Park's extensive recreational fields are already connected to the Mill River Greenway. Mianus River City Park, which includes 220 acres of natural areas, and the Mianus River State Park are located along the Stamford-Greenwich border. There are several isolated open spaces along the Noroton River bordering New Canaan. A series of brooks including Spring Brook, Ayers Brook, Toilsome Brook, Holts Ice Pond Brook, Havitland Brook and Poorhouse Brook are significant natural features and open spaces. The rivers and brooks connect to the North Stamford Reservoir, the Mianus Reservoir and the Laurel Reservoir. The Dorothy Heroy Park, which includes playing fields and recreational facilities, is located near the Laurel Reservoir. The City also has a public golf course, the Gaynor Brennan course. In addition, Stamford has a series of smaller parks located throughout the City, including Jackie Robinson Park and Lione Park, as well as a series of urban parks and public plazas Downtown.

B. Previous Open Space Studies

The City's 2002 Master Plan described the importance of open spaces throughout the community and proposed linking various green spaces with a greenway along the river systems and on land adjacent to the Merritt Parkway. In 2007, SWRPA prepared an open space analysis of the South Western Connecticut region identifying potential new open space within Stamford. The SWRPA analysis provided an acquisition plan for new open spaces and identified areas in need of conservation management plans. The open space areas recommended for protection generally follow the north-south orientation of rivers and brooks and their associated ecological systems. *Towards a Livable Community*, prepared by Regional Plan Association and published by the Downtown Special Services District in 2010, reviewed a series of improvements to existing open spaces in the Downtown. It recommended pedestrian routes with improved streetscape designs connect Downtown open spaces, and also suggested small pocket parks be created in underutilized portions of Downtown's existing public right of ways. Collectively, these documents supported a network of open spaces could be expanded throughout the City.

C. Expanding the Open Space Network

This Master Plan proposes green corridors, individual community parks and a diverse shoreline. New green pedestrian corridors and open spaces are envisioned to create a city-wide green network.

Policy Recommendations

Policy 7A: Expand and Link the City's Open Spaces

The Mill River Greenway should be further expanded as a continuous linear park with a walking and bicycle path that connects its entire length from Stamford Harbor to Bull's Head. Pedestrian trails along the river should continue further north of Bull's Head. Potential trails parallel to the Merritt Parkway could connect the Mill River/Rippowam trail system to the Mianus River trail system, and to Holts Ice Pond Brook. The plan proposes that regional alliances be established to create regional open space networks. These might include further extensions of the Mill River Greenway and Mianus River into New York State or improvements along the Noroton River into New Canaan. Bicycle routes should be developed, as feasible, to connect Stamford's public beaches to nearby neighborhoods and to the Downtown.

Policy 7B: Create New Streetscape Connections to Downtown

Recommendations also include new east/west streetscape connections in the Downtown vicinity. The first encompasses Main Street from West Main Street to Stamford Town Center. It would connect the Mill River Greenway to Columbus Park and to Veterans Park, and would consist of improved public parks as well as enhanced streetscape design between the parks. A second streetscape connector extends from Jackie Robinson Field to Elm Street along Tresser Boulevard. It would include transformation of Tresser Boulevard into a complete street with improved pedestrian and landscape features. An additional east/west pedestrian connection may be developed from Kosciuszko Park across or parallel to

the Hurricane Barrier at the East Branch of Stamford Harbor, and then across Shippan to Westcott Cove. Collectively, the greenways will provide access to park space for a greater number of individuals.

Implementation Strategies

7B.1: Provide high-quality streetscape designs along principal streets. Street improvements will require trees and plantings as well as improvements to urban hardscapes and crosswalks in order to provide pedestrian comfort.

7B.2: Adopt “Complete Streets” design standards in order to accommodate bicycle and pedestrian improvements in street and sidewalk projects. Reclaim space in streets with an excessive number of overly wide lanes for bicycle access.

7B.3: Improve pedestrian comfort at underpasses. Principal causes of discontinuity in the City are the elevated structures of I-95 and the Amtrak Railway. Both of these structures limit connectivity between the northern and southern portions of the City. A limited number of street underpasses have poor facilities for pedestrians.

7B.4: Increase access to parks within a quarter-mile walking distance of each neighborhood. Increased access to school properties for recreational use and a limited number of new recreational parks may be required to support neighborhood needs.

Policy 7C: Enhance Open Space Management

Open spaces require various types of management. Natural areas require stewardship to support their ecology, and regulations to protect them. Management plans may stem erosion problems, protect areas from overuse, maintain cleanliness, remove invasive species and increase safety. Some existing open spaces need further programming of activities. The extensive waterfront of Stamford requires management to balance the use of active waterfront activities, its natural areas and areas for flood protection. The maintenance of a public marina, docks, waterside walks, wetlands and beaches provides an important connection of Stamford to Long Island Sound. All of these management issues must be accounted for in the City’s operating funds.

Policy 7D: Aggressively Pursue Open Space Acquisitions, Open Space Dedication and Open Space Easements. The City has successfully employed a mix of acquisition, dedications and easements, often in cooperation with local and national land trusts and as a positive outcome of land use review. The City’s *Parks, Recreation and Open Space Master Plan* identifies a number of acquisition priorities, mainly in North Stamford. Additional priorities include out-parcels which prevent the unification of Cummings Park East and West; larger grounds for the Rogers Magnet and K.T. Murphy public schools; and parks adjoining community centers in the South End, Waterside and West Side.

Policy 7E: Support an Active and Diverse Waterfront

Implementation Strategies

7E.1: Establish and maintain diversity of viable water-dependent uses that a) individually and collectively provide significant economic benefits and enhance the quality-of-life in the City; and b) are consistent with the capacity of coastal resources to support those uses without the occurrence of significant adverse impacts on environmental quality or public health, safety or security. Maintain and enhance Stamford's status as a center of recreational boating activity on Long Island Sound and a regional destination for visiting boaters.

7E.2: Encourage and support continued operation and, where feasible, enhancement of public and private recreational boating uses and facilities, including facilities for the maintenance, repair, storage, hauling and berthing of vessels. Avoid development that would result in significant reduction of available recreational boating services, including, but not limited to, vessel maintenance, repair, storage, hauling and berthing facilities of local and/or regional significance.

7E.3: Maintain and enhance, for public use and enjoyment, waterfront parks, beach areas and other facilities that provide opportunities for public access to the City's coastal waterways and Long Island Sound, including but not limited to, City-owned properties and privately owned areas that provide public access to and along the coastal waterways.

Policy 7F: Maximize public access to the waterfront. Existing public access and visual access to the waterfront is to be preserved and enhanced wherever possible. New access should be mandatory as redevelopment occurs, except in cases where public safety would be at risk. The extent and layout of such access will be dependent upon 1) the use of each waterfront site (e.g. public access would pose safety or significant security issues on waterfront land used for water-dependent industry, and 2) its location in relation to other public access resources or opportunities.

The most meaningful public access will most likely be achieved where site plan features and permitted uses draw people to areas where waterfront access is provided and where there is continuous public access along the water's edge. Frequent connections to inland streets should be provided with pedestrian and view corridors aligned with cross streets to the maximum extent practicable. Continuous public access along the waterfront should take into consideration ways to celebrate and circumnavigate the working waterfront. A series of public destinations such as overlooks and fishing piers along the waterfront edge will help draw people along the linear path. Large blank walls or extensive parking adjacent to the waterfront should be discouraged. New development facing the waterfront should contribute to an active presence along the water's edge.

Implementation Strategy

7F.1: In designated areas, promote continuous waterfront access through easements and public acquisition. Priority areas for acquisition include both sides of the West Branch, the east side of the East Branch and along the Mill River south of Scalzi Park. Much of this waterfront is either park, vacant, underutilized for industry or subject to flooding. Connections between the Downtown and the West Branch of the Harbor should also be considered.

7.2 CONTEXT-SENSITIVE DEVELOPMENT

Goals

- **Promote sustainable development patterns**
- **Encourage sustainable building design**

A. Introduction

The City has extensive watersheds and natural ecological systems to protect. It also must continue to direct growth of the City toward neighborhoods that are less auto-dependent, more walkable and can build upon the City's access to transit. Stamford's future development should continue to examine methods to use resources efficiently including energy, water and materials. Methods to improve waste reduction must continue to evolve. As a coastal city, Stamford must respond to sea level rise and the potential increases in the frequency of flooding. Solutions to drainage and flooding issues may be addressed in part with green infrastructure. The City has already undertaken a series of studies and measures to address sustainability, most notably including the Sustainability Amendment of 2010.

The Use of Metrics

As a departure from the other chapters of this Master Plan, sustainability metrics have been provided for the chapter to assist the City in measuring progress toward sustainability goals and the efficacy of policies. Three types of metrics addressed in this chapter:

1. *Benchmarks*, which are a reflection of existing conditions or a starting point;
2. *Targets*, which measure goals and objectives; and
3. *Progress*, which measures movement toward fulfilling a goal and objective.

As outlined in the following sections, suggested metrics are provided, as appropriate. It should be noted that not all goals and policies can be readily quantified, and the measurable data in some cases are not readily available or easily obtained. Also, for metrics to be useful, updates will need to occur on a regular basis; these cannot wait 10 or more years for a new master plan. Therefore, it is important that the City

commit itself to a schedule of updating the metrics listed herein. This will enable Stamford to prepare a report card on how it is doing, over time, with respect to its sustainability goals and policies.

B. Neighborhood Pattern and Design/Built Environment

The planning of neighborhoods has a large impact on quality-of-life and on the use of natural resources. Since vehicles are a significant source of Green House Gas (GHG) emissions, sustainable planning seeks to reduce auto-dependency. Vehicle-related accidents also comprise a significant portion of Centers for Disease Control (CDC) injury and mortality rates. Compact community plans are sustainable because they reduce auto-dependency, allow walkable neighborhoods and offer practical access to energy-efficient transit.

Policy 7G: Create Compact and Complete Communities

The plan encourages growth of compact communities. These may be focused in areas that have access to transit such as Downtown, Glenbrook and Springdale. The City has already fostered transit-oriented development planning studies in these areas. Compact growth areas should be planned with a mix of uses including residential, office, retail and institutions, so that all the needs of daily life are with short walking distances from each other. The plan proposes walkable streets within each neighborhood and “complete streets” with bicycle access.

Implementation Strategies

7G.1: Encourage active ground floors for developments along pedestrian routes. Require through-block pedestrian connections for large sites, where appropriate.

Metric:

LEED for Neighborhood Development provides several measurement standards for compact communities.

7G.2: Density. Build any residential components of the area at a density of 7 dwelling units per acre or greater of buildable land available for residential uses, and build any nonresidential components of the project at a density of 0.50 FAR or greater of buildable land available for nonresidential uses.

7G.3: Locate and/or design the development such that 50% of its dwelling units are within a quarter-mile walking distance of the number of diverse uses.

Policy 7H: Encourage Infill Development

Infill development is a key strategy to the growth of compact walkable communities. The City may continue its efforts to redevelop brownfield sites, underutilized vacant property, surface parking lots within the city center and underutilized sites near transit.

Implementation Strategy

7H1: Develop an inventory of infill parcels that have been previously developed and brownfield or greyfield sites of greatest priority and potential for development or redevelopment, and encourage brownfield redevelopment.

Metric:

Encourage 75% of new housing units or developments utilize existing water and sewer mains and do not require extending or widening public roadways.

Policy 7I: Provide Greater Transportation Choices

Current transportation patterns consume a large percentage of energy resources and contribute to GHG emissions. Providing alternative modes of transportation can support cleaner air and reduce fuel consumption. Street designs should integrate pedestrians and bicycle use. Transit options which expand upon Stamford's existing network of bus and rail can provide a sustainable transportation system.

Implementation Strategies

7I.1: Transportation Demand Management (TDM). Create and implement a comprehensive TDM program to reduce weekday peak-period motor vehicle trips by at least 20% compared with a baseline case, and fund the program for a minimum of three years following build-out of the project. Require that developments under site plan review submit Parking and Transportation Demand Management plans (PTDM) in order to reduce single-occupant vehicle trips associated with the project. PTDM measures should include some or all of the following: easy access to transit, shuttle services, ride-sharing, bicycle and pedestrian facilities, flexible working hours, flexible parking strategies and preferential parking for low-emission vehicle.

7I.2: Phase out free parking. Phase out free parking assigned to City staff for privately owned vehicles and increase alternative transportation options for employees. Use revenues for alternatives to private vehicle travel.

7I.3: Shared parking. Review parking requirements to allow for shared parking strategies and reduced parking requirements in transit-oriented development areas.

7I.4: Vehicle charging stations. Encourage the installation of vehicle recharging stations on all public garages and City owned lots.

71.5: Car sharing. Support and encourage the growth of car sharing (e.g. "Zipcars") among City residents and businesses through actions that expand the supply of car sharing vehicles at convenient locations and actions that increase the demand for car sharing services.

Metrics:

- Demonstrate an annual decrease in vehicle miles traveled measured from a baseline year.
- Mode Split metric per International Council for Local Environmental Initiatives Star Community Rating System
 - Achieve the following thresholds for journey-to-work trips:
 - Drive alone maximum: 60%
 - Bicycle + Walk + Transit minimum: 25%
 - Bicycle + Walk minimum: 5%

C. Sustainable Buildings

Buildings consume a large percentage of the energy supply, as well as water and building materials. Several technologies have been developed that allow the design of buildings to use resources more efficiently and also to provide healthy living environments. There are several documents that help guide the design of sustainable buildings. One of the more prominent guiding systems is the LEED (Leadership in Energy and Environmental Design) group of rating systems that address new construction, building renovations and neighborhood planning. Improvements in construction standards can be made for both private buildings and public buildings. The strategies and tools available to encourage sustainable private building are different than for public buildings. The City has several ongoing programs to guide private development:

Corporate Sustainability Challenge

The City has a Corporate Sustainability Challenge partnership with the Building Owners and Managers Association. This encourages sustainable buildings in the City and encourages retrofit commissioning of buildings. The challenge has included several participants and LEED-certified buildings.

Sustainable Stamford

Sustainable Stamford is the mayor's task force on sustainability, established in 2007. Its mission is to promote energy efficiency, environmental education, waste reduction and recycling, greenhouse gas emissions reductions, green buildings and all efforts affecting sustainability in Stamford.

Sustainable Design Scorecard

The City requires that a Sustainable Design Checklist, developed in partnership with the RPA and ICLEI (Local Governments for Sustainability), be completed as part of the site plan review process.

Solarize Stamford

Solarize is a unique program offered by the Clean Energy Financing and Investment Authority (CEFIA) in partnership with SmartPower that increases residential solar.

2030 District Program

This program, sponsored by the Business Council of Fairfield County, provides a unique private/public partnership where property owners and managers, together with government and businesses, provide a business model for urban sustainability through collaboration, leveraged financing and shared resources.

Policy 7J: Improve Standards for New Private Construction and Renovations

Implementation Strategies

7J.1 Benchmarking. Require benchmarking of significant privately owned structures and operations. Benchmarking is the measurement of a facilities energy use, water use, waste and emissions. A method commonly used to calculate and record these uses and emissions is EPA's Energy Star Benchmarking tool. The benchmarking requirement can be enabled through a City ordinance. Examples of Cities that have enacted benchmarking ordinances include New York City, Boston, Seattle and Washington D.C.

Examples of Benchmarking Ordinances

New York City: Enacted a benchmarking program known as Local Law 84 in 2009. LL84 requires annual benchmarking data to be submitted by owners of buildings with more than 50,000 square feet for public disclosure using the Energy Star Benchmarking tool.

Seattle: The Energy Benchmarking and Reporting Program (Ordinance 123226 and 123993) requires owners of non-residential and multifamily buildings (20,000 sf or larger) in Seattle to track energy performance annually and report to the City.

Washington D.C.: By 2014, all District buildings (commercial and multifamily) over 50,000 square feet will fall under a benchmarking requirement.

Boston: In 2013, enacted the Building Energy Reporting and Disclosure Ordinance (BERDO). This Ordinance requires Boston's large- and medium-sized buildings to report their annual energy and water use to the City of Boston, after which the City makes the information publicly available. Additionally, every five years, buildings need to complete an energy assessment or

energy action; exemptions are provided for buildings that are already efficient or are making significant progress on energy efficiency.

7J.2: Incentives. Encourage buildings to meet measurable standards of sustainable design on a voluntary basis. Incentives to encourage the use of the LEED Rating system or the Energy Star system include the use of expedited building approvals, building density bonuses, and exempting the sustainability improvements from the assessed value of a property.

7J.3: Require sub-metering. Require that all new and substantially renovated multi-unit buildings be “sub-metered” to enable monitoring of energy and water consumption on a unit-by-unit basis.

7J.4: Encourage retrofit commissioning. Upgrade mechanicals for energy efficiency in all major buildings and facilities to optimize their energy usage. Building commissioning will generally increase the energy efficiency by 15 percent.

7J.5: Adaptive reuse of existing structures. Reuse existing buildings to conserve materials and also to divert large amounts of waste from landfills. The City has allowed several office buildings to be reconfigured and adapted for residential use. The City may review its historic preservation program to foster easier reuse of historic structures. Strategies may include expedited building permit review or zoning incentives for adaptive reuse of existing structures.

7J.6: Building code modification. Several states allow municipalities to amend their local building codes to accommodate concerns specific to a region. Connecticut currently does not allow these modifications. Within the building code amendments, standards can be set for increased thermal performance, water usage, and energy efficiency.

7J.7: Support sustainable design in the industrial sector. The industrial sector in the U.S. accounts for a substantial percentage of total water and energy consumption. The City may partner with the local industrial sector to improve reporting of consumption levels including water, energy consumption and emissions levels through the use of a benchmarking ordinance. Training may be provided to educate businesses on successful sustainable manufacturing practices.

Policy 7K: Sustainable Municipal Buildings

The City may increase its standards of sustainable design for its own municipal facilities and schools. The City’s Local Action Plan for Green House Gas Emission Reductions, prepared in 2005, discusses specific targets for water and energy efficiency of municipal facilities. The action plan lists methods to reduce GHG emissions within various facilities and sets targets of 20 percent reduction over 1998 GHG emission levels. The plan discusses the purchase of green power and the installation of green energy at some municipal facilities.

The City enacted an ordinance that requires new construction and renovations of municipal buildings to meet the LEED Silver Standard. The Academy of Information Technology and Engineering (AITE) was built to that standard under this guideline. Additional programs have included retrofit of select government rooms and street lights to energy efficient LED fixtures. Energy efficiency improvements have been made to existing mechanical systems at several facilities. Several solar photovoltaic installations have been completed on various facilities. The City also conducts benchmarking of energy and water consumption of its buildings.

Implementation Strategies

7K.1: Enforce sustainable remodeling standards. Remodeling of municipal buildings is often more frequent than the construction of new buildings. Standards as described in LEED for Interior Design and Construction and LEED for Building Operations and Maintenance should be used to guide renovations.

7K.2: Energy Star. Select and implement energy efficiency projects with the overall goal of bringing all municipal facilities up to Energy Star levels by 2018.

7K.3: Adaptive reuse of existing municipal buildings. Reuse of existing buildings is an efficient way to conserve materials and also to divert large amounts of waste from landfills. Examine repurposing of underutilized structures.

7K.4: Renewable energy credits. Continue to source its power from renewable sources through the purchase of Renewable Energy Credits (REC's) and/or with small-scale green power generation projects. Ensure Stamford's continued commitment to purchase at least 20 percent of municipal energy from renewable sources, as it did by participating in SmartPower's 20 percent by 2010 Campaign.

7K.5 Efficiency Opportunities. Continue programs of retrofit building commissioning and energy efficiency improvements. Inventory all energy efficiency opportunities in municipal buildings. Pursue alternative energy options for City facilities to reduce dependence on fossil fuels.

7.3 ENVIRONMENTAL PROTECTION, RESILIENCY AND INFRASTRUCTURE

Goals

- **Protect natural areas**
- **Protect water quality**
- **Protect coastal resources**
- **Improve efficiency and resiliency of municipal infrastructure**
- **Reduce greenhouse gas emissions**
- **Measure progress toward sustainability goals**

A. The Environment

The City's rivers, brooks and shoreline form the framework of ecological systems in the area. There are also wetlands and forests associated with the area's ecological system. In order to maintain the health of Stamford's ecological systems, land that provides essential habitat and contributes to sustaining natural water systems should be protected. The area's watersheds are dependent on maintaining these lands. Protecting these areas will help secure the water supply, the flora and fauna, provide wildlife corridors, promote natural diversity and also help mitigate flood damage in certain areas. In 1997, the State of Connecticut set a goal of preserving 21 percent of the state's land as open space by 2023. According to a study prepared by SWRPA in 2007, approximately 13.5 percent of Stamford's land area is dedicated open space due to the extent of development.

Policy 7L: Further identify critical natural areas

Lands areas that are critical to the ecological system of Stamford should be further identified through ongoing review and analysis. The review of lands by SWRPA in 2007 identifies some of the land that should be protected. See Map 3 of the SWRPA report for the Open Space Acquisition Policy.

Implementation Strategies

7L.1: Prepare and maintain a long-range list of properties. Develop a prioritized list of lands that should be placed under open space or conservation protection. In addition to the lands identified by SWRPA, the City may also enlist the aid of various organizations including non-profits to identify lands. Examples of organizations include the Stamford Land Conservation Trust, the Fairfield County Deer Management Alliance program, the Friends of Mianus River Park, Trout Unlimited Mianus Chapter and the Western Connecticut Council of Governments (WCCOG, the successor agency to SWRPA as of December 31, 2014). The organizations may provide the ability to evaluate the natural

systems for their health and importance to the ecological system. The areas that are identified for protection should be grouped into categories that comprise a list of parcels to be acquired for protection and a list of natural elements on both public and private property that may require additional regulatory protection, such as protective buffers and activity restrictions. The areas may include natural assets that span across into neighboring jurisdictions.

7L.2: Land protection methods. Assemble tools available to communities to protect and acquire open space. They include acquisition, conservation easements, land use regulation and tax incentives.

7L.2-a: Acquisition. Outright fee-simple acquisition is the surest method to protect an open space property. Fee-simple ownership gives the purchaser rights to the land and full legal title.

7L.2-b: Conservation Easements and Purchase of Development Rights. With a conservation easement, the purchaser acquires a less-than-fee interest in the land but not necessarily the land itself. The easement or right purchased is recorded on the deed and runs with the land in perpetuity

7L.2-c: Land Use Regulation. Stamford permits open space subdivisions in its zoning regulations. Under this approach, the subdivider dedicates a portion of the property as open space in perpetuity. The intent of these regulations is to preserve any unique natural characteristics on a site while also allowing for development. The Planning Board may require such a dedication or a developer may be able to obtain a density bonus or reduced setback requirements for a dedication.

7L.2-d: Tax Incentives. The federal and state governments offer a variety of tax incentives to encourage landowners to preserve their property as open space. In Connecticut, Public Act 490, created by the legislature in 1963, allows property classified as forest, farm or open space to be assessed based on its current use rather than its fair market value for 10 years, thus lowering the tax burden, provided the land stays classified as forest, farm or open space.

7L.2-e: Funding. Funding for these methods of land control may be obtained from various sources. The Recreation and Natural Heritage Trust Program, created by the Legislature in 1986, is the primary program for acquiring land to expand the state's system of parks, forest, wildlife, and other natural open spaces. Financial assistance from these programs is combined with matching funds provided by either a municipality, local nonprofit land conservation organization, or both. Further programs are described in the SWRPA report.

Policy 7M: Protect Watersheds

Protect land areas that may be of critical interest for Stamford's watersheds. The City has three primary watershed areas to be monitored. Activity on land in these areas affects the water table level, and water quality for all of Stamford. The watersheds include:

- Mill River Watershed
- Mianus River Watershed
- Noroton River Watershed

Implementation Strategies

7M.1: Prepare a watershed management plan. The plan will maintain the quantity and quality of public water supplies and the quality of the receiving waters in balance with the ecological integrity of the watershed. It will be designed to meet the existing and future needs of the community, on an equitable, efficient and self-sustaining basis. Protective measures may include restrictions on the use of pesticides, fertilizers and hazardous materials in watershed areas. Watersheds spanning across jurisdictions should be protected in partnership. Incentives may be created to restore damaged portions of the watersheds.

7M.2: Monitor water quality. Continue to monitor Water Quality in Area Rivers and in groundwater.

Policy 7N: Protect Coastal Lands

Conserve and enhance natural coastal resources in the Stamford Coastal Management Area (SCMA), including beaches, rocky shorefronts, estuarine embayments, shellfish concentration areas, tidal wetlands, intertidal flats, coastal hazard areas and other resources.

Implementation Strategies

7N.1: Protect natural flood barriers. Protect coastal land forms that act as natural barriers to flooding. These include wetlands, waterfront natural grasslands. As an example, protection should be provided for the high, unmodified bluffs on the eastern side of the Shippan Peninsula from any development that accelerates natural erosion processes.

7N.2: Recognize the ecological inter-relationships among resource areas. Recognize that tidal waters and intertidal resources in the SCMA are part of the Long Island Sound estuarine and watershed system. Consider that actions within one part of that system can have significant impacts on other parts of the system, or on the system as a whole.

7N.3: Consider cumulative impacts. Consider the cumulative impacts on coastal resources and environmental quality that may result from the incremental impacts of a single action added to other past, present and reasonably foreseeable actions when making decisions affecting land use and development in the SCMA.

7N.4: Capacity of Coastal Resources. Avoid new or expanded uses, development or other activities that would exceed the capacity of coastal resources to support those activities in a safe, environmentally sound and economically sound manner.

7N.5: Restoration. Encourage and support restoration of coastal resources and ecological functions historically lost or degraded in the SCMA, including, but not limited to, beaches, tidal wetlands, sand dunes and shellfish resources.

7N.6: Maintain shoreline structures associated with environmental protection. Encourage and support the repair or replacement of deteriorated shore protection structures, including seawalls, bulkheads and other structures, where such deterioration is causing significant adverse impacts on the environmental quality, including water quality, of coastal resources.

7N.7: Environmental remediation. Identify and evaluate any significant environmental contamination affecting beneficial use and development of coastal area properties.

Policy 7O: Manage Natural Areas

Natural areas require ongoing monitoring and management. Issues of erosion, health of habitat, pollution, use, invasive species and accessibility require continued field observation and overall planning. Monitoring plans should be maintained for each natural area.

Implementation Strategies

7O.1: Establish partnerships to monitor natural areas. These may be done in partnership with area nonprofit organizations. Typical management concerns may address erosion on steep slopes and heavy foot or bicycle traffic areas. Management practices may also encourage use of native species for plantings and removal of invasive species, and may include restriction of uses in floodplain areas.

7O.2: Institute Integrated Pest Management (IPM) on City properties to reduce pesticide risk and exposure, particularly to children. IPM is a safer and usually less costly option for effective pest management, using common sense strategies to reduce sources of food, water and shelter for pests in buildings and grounds. An IPM program takes advantage of all pest management strategies, including the judicious and careful use of pesticides.

B. Climate Adaptation and Mitigation

Stamford is a coastal city and is susceptible to impacts of climate change and sea level rise. Statewide, the coastal management boundary is a continuous line delineated by a 1,000-foot curvilinear setback from the mean high water (MHW) line, a 1,000-foot setback from the inland boundary of state-regulated tidal wetlands, or the inland boundary of the “100-year” floodplain, whichever is farthest inland. The SCMA’s irregular shoreline covers about 14 miles and supports a diversity of land uses, including residential, commercial, industrial, recreational and open space uses.

Stamford has experienced flooding in the past and may experience future flooding. Some of this flooding may be associated with sea level rise and climate change. Sea levels in the area rose

approximately 1 foot in the past 100 years and are anticipated to rise further. The City's Hurricane Barrier, one of the few built along the East Coast, constructed 1969 by the Army Corps of Engineers, was built of earthen walls at an elevation 17-19 ft and with a sea gate at east branch of Stamford Harbor. It protected more than 600 acres in the southern portions of the City in 2012 during Superstorm Sandy.

FEMA is revising the flood levels for 100- and 500-year flood events to higher elevations in order to reflect increased flood risk. These adjustments, in turn impact flood insurance rates and land values. The higher flood elevations may impact areas outside the flood barrier including Shippan, Westcott Cove, Dolphin Cove and areas along the banks of the rivers.

Policy 7P: Prepare Flood Mitigation Strategy

Implementation Strategies

7P.1: Identify vulnerabilities. In order to prepare for future events, the City may prepare a list of vulnerable areas, and identify at-risk facilities including critical infrastructure, based on FEMA maps.

7P.2: Develop catalogue of strategies. The City may develop a catalogue of various flood mitigation strategies similar to New York City's *A Stronger, More Resilient New York* report of 2013. These strategies may include additional flood barriers, expansion of flood plain areas, vegetated barriers, further restrictions on development in flood plains, erosion control and augmentation of natural barriers. Green infrastructure may assist in drainage of flood waters. A Mitigation Plan will match strategies to vulnerable areas.

7P.3: Adapting building regulations. Adapting to potential increases in flooding along rivers and shoreline will require adjustments to how development can occur. Adjustments may be required for buildings that are already located in low-lying areas, and to the design standards of new buildings near the water. Zoning of affected areas may require revisions that allow for minor adjustments in building heights, raising existing buildings to higher elevations, and entrance locations in required yards in order to accommodate higher flood elevations.

7P.4: Future planning. When planning future projects, the City may review the location of a project and determine if it lies within the list of vulnerable areas. The most current climate science should be considered to assess future intensity and frequency of storms. The information should be included when designing and developing the projects and infrastructure.

7P.5: Preparedness and response. Prepare, test and update plans and programs for emergency operations and response, including procedures for issuing forecasts and warnings to the public and otherwise providing public information. Provide facilities, equipment and training needed for effective emergency response; maintain coordination among all agencies with emergency responsibilities and further develop the emergency evacuation plan.

7P.6: Natural protective features. Recognize the natural protective features of coastal resources, including beaches, dunes, and wetlands, and utilize those features, to the extent practical and

feasible, to provide effective shore protection; encourage restoration of degraded coastal resources in accordance with detailed plans. Protect the high, unmodified bluffs on the eastern side of the Shippan Peninsula from any development that accelerates natural erosion processes.

7P.7 Education. Provide educational programs to increase public awareness and education concerning coastal hazards.

7P.8 Continue the City’s maintenance of the Hurricane Barrier in cooperation with the Army Corps of Engineers.

Policy 7Q: Mitigate Contributing Factors to Climate Change

There are also methods the City can adopt that mitigate some of the contributing factors to climate change. These include reduction of the heat island effect and reduction of greenhouse gas emissions (GHG). The heat Island effect comes from the absorbance of solar heat and energy emissions in urban areas. The reduction of GHG emissions is discussed in the energy section of this chapter.

Implementation Strategies

7Q.1: Provide incentives for the use of green and “cool” roofs. A cool roof is a roofing system that delivers high *solar reflectance* (the ability to reflect the visible, infrared and ultraviolet wavelengths of the sun, reducing heat transfer to the building) and high *thermal emittance* (the ability to radiate absorbed, or non-reflected solar energy). Most cool roofs are white or other light colors.

7Q.2: Encourage the installation of a “cool roof” anytime a building is being constructed or re-roofed.

7Q.3: Inventory and map all the buildings in downtown that have the potential for green and/or cool roofs, evaluating the cumulative benefit in thermal reduction.

7Q.4: Use materials that have low solar reflectance value, generally lighter colored material surfaces as they reduce heat absorption from the sun.

7Q.5: Expand the urban forest with street trees and green areas.

C. Sustainable Energy

A secure energy supply is critical to the vitality of the City. Energy is derived from a variety of sources, some of which are associated with minimal environmental consequences and some, such as carbon-based fuels, that have varied levels of impact on the environment. Greening the energy supply is aligned with reductions of GHG emissions and also with reduced environmental impact in the extraction of raw fuels. The City has already prepared a Local Action Plan for Green House Gas Emission Reductions in 2005 that encourages the transitioning of energy generation to renewable energy sources, and to more

energy efficient generation sources such as district energy. It also recommends strategies for reduced energy consumption.

Policy 7R: Implement, monitor and update Local Action Plan: Greenhouse Gas Emission Reductions (2004)

The City completed an inventory of greenhouse gas emissions from both the municipal and community sectors in 2003. Require ongoing reduction measures and monitoring to verify progress toward an emissions reduction target of 20 percent below 1998 levels by 2018.

Policy 7S: Create Resource Efficient Energy Infrastructure

Implementation Strategies

7S.1: Encourage reduction in energy use.

7S.2: Energy Improvement District. The City's Energy Improvement District Ordinance, established in 2007, can continue to support more efficient and cleaner sources of power and heat. The district supports efforts to develop multiple types of renewable energy including solar and district energy systems.

7S.2-a: District energy. District energy systems are highly efficient systems that generate electricity, heating, and cooling for a group of buildings within a close proximity of each other. They produce energy efficiently, and have low GHG emissions. Due to their cost, they are typically used for larger facilities. In recent years, they have been installed for single-ownership groupings of buildings such as universities and hospitals; however, there is growing application in new large redevelopment areas and in new communities.

7S.2-b: Energy Improvement District boundary. The boundary of the district should be evaluated for inclusion of significant development that may benefit from district energy systems.

7S.2-c: C-PACE financing. The City is part of the C-PACE program. C-PACE financing effectively allows property owners to borrow money from a local government to pay for renewable-energy systems and/or energy-efficiency improvements. The amount borrowed is typically repaid via a special assessment on property taxes, or another locally-collected tax or bill, such as a utility bill.

7S.3: Promote local renewable energy generation

The City has encouraged smaller installation-scale green energy sources by individual private property owners. The State's adoption of net metering in 2013 allows owners to sell energy they generate on premises to the electrical utility. The system allows green energy systems to become more cost-effective. Additional strategies may allow easier access to green energy sources

7S.3-a: Incentive programs. Additional incentive programs that encourage use of green energy include the CTClean Energy Options and Solarize Stamford discussed previously.

7S.3-b: Zoning revisions. To further facilitate small-scale green energy installations, the City may revise zoning to make it easier to install small to medium scale renewable energy installations. It may also streamline permitting for these facilities.

Policy 7S.4: Promote use of renewable energy provided by utilities. Purchase of green energy generated by larger utilities is provided through the use of REC's, Renewable Energy Credits. There are several providers of these in the Stamford Area.

Policy 7S.5: Encourage access for lower-income households to renewable energy. Conduct a study to determine how to effectively expand and enhance energy services for low-income households. Combine the delivery of City and agency programs with other income-qualified assistance programs, such as Community Development Block grants. An integrated suite of low-income programs will provide increased potential for cost savings in energy and water, as well as health-related benefits.

D. Infrastructure and City Services

Infrastructure and City services connect and serve the developed areas of a city. Infrastructure conveys power, water, stormwater, sewer, telecommunications and also comprises our transportation facilities. As the City strives to use power, water, and materials more efficiently, the associated infrastructure must also adapt. Green infrastructure may contribute to resolving drainage and water pollution issues. Public lighting can become more energy efficient and also be designed to reduce light pollution. City services for waste collection can facilitate further recycling of waste. The following are objectives for increasing the sustainability of infrastructure and services.

Policy 7T: Create Sustainable Community Water Systems

Adequate supplies of potable water have become increasingly challenging to secure in many portions of Connecticut. Potable water in Stamford is supplied by CT Water through Aquarion from reservoirs in area or by private wells of individuals. As a steward of the environment, the water company is awarding individuals, non-profit groups and businesses recognition and monies for volunteer efforts to protect or

restore Connecticut's natural resources. Winners are chosen based on their project's results in improving or protecting the state's air, water, soil or plant and wildlife communities.

Implementation Strategies

7T.1: Create water-efficient infrastructure. A substantial amount of water is often lost in older, degraded pipes with leaks. Leaks in water infrastructure may be repaired to reduce waste. The City may implement a series of strategies to create more water-efficient infrastructure as well as conserve water use. These efforts can supplement water conservation efforts within individual properties.

Policy 7U: Create Green Infrastructure to Address Area Drainage Issues and Water Quality

The existing stormwater drainage system includes stormwater drainage pipes that are separated from sanitary sewer pipes in developed urban areas. In developed areas, the pipes capture stormwater and discharge it into area rivers and Long Island Sound. In rural areas, stormwater runs off the edge of paved surfaces onto the soil or local streams. The existing system is associated with two general areas of concern: the quantity of stormwater that is directed into streams contributing to local flooding, and the pollution of stormwater.

Quantity: Compared to the pre-development conditions, post-development stormwater discharges can increase the runoff volume, increase the peak discharge and decrease the infiltration of stormwater, which thereby decreases base flow in headwater streams and in wetlands. The changes to stream hydrology can have negative impacts on channel stability and the health of aquatic biological communities.

Quality: Stormwater runoff from urban roads and parking areas is contaminated by chemicals from vehicle exhaust that accumulate on road surfaces. The chemicals mix with rainwater and then are drained through the piping system into natural water bodies. The contamination from both post development discharges and from urban roads includes hypoxia, pathogens, toxic contaminants and floatable debris in Long Island Sound.

Implementation Strategies

7U.1: Stormwater runoff ordinance. In order to reduce the quality of stormwater that is directed into streams, regulations should be adopted that require the volume of stormwater running off of properties post-development be made to approximate predevelopment conditions. This will reduce erosion in streams and local flooding.

7U.2: Stormwater manual. Adopt a stormwater management manual that uses green infrastructure strategies in order to provide guidance to property owners on how to manage stormwater on their properties. These would be supplemental to the State's Stormwater Management Manual. The Town of Greenwich adopted such a manual in 2012 to address similar issues. The manual includes description of Low Impact Development (LID) and green infrastructure strategies.

7U.3: Catch basin enhancement. Enhance catch basin and storm sewer maintenance by increasing frequency of cleaning. Identify and eliminate illicit discharges into the storm system. Ensure that all maintenance is well documented, up-to-date, and available to regulatory agencies.

7U.4: Green infrastructure plan and low impact development (LID). Sustainable stormwater management is a critical component of green infrastructure. Stormwater can be cleaned using natural plant filter systems called “bio-filters” or rain gardens. Bio-filters can also help alleviate a portion of the flooding issues in the City. Their use also can help maintain natural water table levels and can limit salt water intrusion into the aquifer from the Long Island Sound. The City can create a Green Infrastructure Plan for a network of green infrastructure elements that augment conventional drainage systems. Installation locations may include public spaces as well as the edges of City streets. This infrastructure network may be expanded by private property owners through incentives that link with the City’s broader infrastructure program.

7U.5: Permeable Paving. Incorporate permeable paving standards and adopt minimum requirements for parking lot landscaping. As noted in the Transportation section, the utilization of environmental professionals (e.g. landscape architects) should be primary, and not an afterthought in site plan design.

Policy 7V: Energy Efficient Lighting and Reduced Ambient Light

Public lighting consumes energy and can contribute to light pollution. The City has already transformed a substantial portion of its public lighting on streets to more energy efficient fixtures such as LED lighting.

Implementation Strategies

7V.1: Continue efforts to transform exterior lighting including on the exterior of buildings and in parks.

7V.2: Energy use and light pollution may both be improved by adopting the use of fixtures that reduce ambient light and that focus light more directly toward the required tasks. Design standards such as the Dark Sky Standard describe these techniques.

Policy 7W: Reduce Waste

Cities can assist residents and employers in reducing waste and increasing recycling. The waste itself emits CO₂ and requires energy to be transported to out-of-state landfills. Stamford reduces waste by providing curbside collection of recyclable products. The City also has two recycling centers, the Katrina Mygatt Recycling Center, and Scofieldtown Road Recycling Center, to allow recycling of larger items and electronics. Hazardous waste is collected a selected day at central location. Stamford also diverts a portion of its waste to the Bridgeport waste-to-heat facility. The State plan establishes a target of 58 percent municipal solid waste disposal diversion by FY2024. In part through source reduction, recycling

and composting, the State plan attempts to reduce the state's per capita disposal rate from 0.8 tons/person/year in FY2005 to 0.6 tons/person/year in FY2024.

Implementation Strategies

To further reduce waste, the City may also review methods to reduce construction waste and improve composting of food and vegetation.

7W.1: Construction and demolition waste. Construction waste has decreased over recent years as recycling has become more cost effective, but is still a significant volume of waste. Diverting construction waste to recycling can be accomplished using planned recycling programs associated with individual construction projects. The cities of Chicago, Los Angeles and San Francisco passed ordinances mandating 100% recycling of construction debris within City limits. Portland, Oregon takes a different approach by requiring all projects of construction value over \$50,000 file a recycling plan at the start of construction; however specific recycling limits are not set. The plans often include registration of the hauling services to recycling centers. Construction waste plans typically require separation of items on the construction site into recyclable categories.

7W.2: Composting. Encourage composting where possible.

7W.3: Multifamily recycling. Encourage property managers and landlords to increase recycling rates in multifamily buildings.

Policy 7X: Integrate Sustainability Strategies into City Government

Implementation Strategies

7X.1: Sustainability coordinator. Create a sustainability coordinator position to manage and initiate sustainability projects, promote public awareness, manage the City sustainability website, and monitor the success of City efficiency efforts. The coordinator's duties should supplement the efforts of the City Energy/Utility Manager.

7X.2: Sustainable procurement policies. The City may review procurement of various products and services. Products that may be challenging to recycle or dispose of may be banned from procurement.

7X.2-a: Purchase protocol. Institute City of Stamford sustainable procurement standards by modifying purchasing protocol. Institute a green cleaning policy for all City and school buildings, including the use of non-toxic cleaning products and recycled paper goods. Reduce the mercury content of the mercury containing lamps acquired for use in City buildings.

7X.2-b: Municipal fleet. Explore purchase of new municipal fleet vehicles powered by renewable fuel sources, those with flexible fuel options, and gas-electric hybrids. Potentially utilize federal

grant funds to eliminate the cost difference between these and conventional vehicles. Explore fleet vehicle-sharing between departments and/or reduction in vehicle use and fleet size.

7X.3: Eliminate disproportionate environmental burdens and pollution experienced by historically disadvantaged communities. For instance, an asthma map of Stamford (2002-10) shows that the highest densities of asthma patients are located in the neighborhoods flanking I-95.

E. Education

A critical strategy for improving sustainable practices around the City is through education. The extent to which individuals incorporate sustainable practices into their home life as well as their work environment can reduce the need for expensive infrastructure modifications. Education can also result in greater utilization of the investments that are made in sustainable design. Sustainable Stamford provides many of these resources through their website, as well as through educational sessions in various communities. Education sessions may include partnerships with the business community, industrial sector leaders, with the public at large or held within the school system.

